UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,481	07/21/2003	Terrence Blevins	06005/39533	9135

4743 7590 10/21/2005

MARSHALL, GERSTEIN & BORUN LLP
233 S. WACKER DRIVE, SUITE 6300
SEARS TOWER
CHICAGO, IL 60606

EXAMINER	
BARNES, CRYSTAL J	

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 10/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/625,481	BLEVINS ET AL.	
	Examiner	Art Unit	
	Crystal J. Barnes	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-16,20,21,23,31,33,40-42 and 45* is/are rejected.

7)☒ Claim(s) *12,17-19,22,24-30,32,34-39,43 and 44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a second Non-Final Office Action in response to the Amendment received on 15 August 2005. Claims 1-45 remain pending in this application.

Drawings

2. The drawing and amendment to the specification were received on 15 August 2005. These corrections are acceptable.

Response to Arguments

3. Applicant's arguments, see Remarks pages 13-14, filed 15 August 2005, with respect to the rejection of claims 1, 11, 15, 16, 20 and 31-38 under 35 USC 102(e) have been fully considered and are persuasive. Therefore, the rejections of claims 1, 4, 11, 15, 16, 20, 21, 23, 24, 31-38, 40 and 45 have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of USPN 5,892,939 to Call et al.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 11, 13, 15, 16, 23, 31 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,892,939 to Call et al.

As per claim 1, the Call et al. reference discloses a process control system element for use in a process plant having a user interface and one or more process controllers, the process control system element comprising: a control module (see column 8 lines 35-45, "CM 180") adapted to execute on the one or more process controllers ("process controllers 120, 125") to implement process control activities (see column 7 lines 35-40, "controlled process") within the process plant (see column 7 lines 15-20, "process control system 100"); a graphic display module (see column 7 lines 60-64, "US 150") adapted to produce a graphical depiction (see column 8 lines 4-9, "visual presentation") of a least a portion of the process plant ("process control system 100") on the user interface ("US 150"); and a process

simulation module (see column 9 lines 52-54, "visual display generating program") adapted to simulate the operation of one or more physical devices (see column 9 lines 17-30, "graphical elements 210, 220, 230, 240, 250") within the process plant ("process control system 100") being controlled by the control module ("CM 180") and depicted in the graphical depiction ("visual presentation") associated with the graphic display module ("US 150"), wherein the process simulation module ("visual display generating program") is communicatively connected (see columns 8-9 lines 65-1, "LCN 190") to the control module ("CM 180") to communicate data (see column 11 lines 12-17, "bidirectional communication of data") between the process simulation module ("visual display generating program") and the control module ("CM 180") during operation of the control module ("CM 180").

As per claim 2, the Call et al. reference discloses the graphic display module ("US 150") includes a connection element (see column 9 lines 24-26, "graphical element 230") indicating a type of a connection device ("valve") disposed between physical devices ("graphical elements 210, 220, 230, 240, 250") within the process plant ("process control system 100").

As per claim 3, the Call et al. reference discloses the connection element (see column 9 lines 26-30, "graphical element 240, 250") indicates a pipe type connection device ("pipesections").

As per claim 11, the Call et al. reference discloses the process simulation module ("visual display generating program") includes a simulation algorithm ("visual display generating program") adapted to simulate (see column 9 line 66, "emulating") process dynamics (see column 10 lines 2-3, "real time process control") within the process plant ("process control system 100").

As per claim 13, the Call et al. reference discloses the process simulation module ("visual display generating program") includes a simulation algorithm ("visual display generating program") adapted to simulate an efficiency (see column 9 lines 33-44, "low or high temperature") of one or more elements ("second vat") within the process plant ("process control system 100").

As per claim 15, the Call et al. reference discloses the process simulation module ("visual display generating program") includes a first portion (see column 8 lines 52-61, "emulation") stored in and adapted to be executed in a first computing device ("US 150") within the process plant ("process control system 100") and a second portion ("emulated") stored in and adapted to be executed in a second

computing device ("any module") within the process plant ("process control system 100").

As per claim 16, the Call et al. reference discloses the first portion ("emulation") of the process simulation module ("visual display generating program") is communicatively connected (see column 8 lines 59-61, "network of cooperating computers") to the second portion ("emulated") of the process simulation module ("visual display generating program") through an external reference (see column 8 lines 59-61, "network of cooperating computers").

As per claim 23, the Call et al. reference discloses the control module ("CM 180") is adapted to receive a simulated parameter (see column 9 lines 33-44, "vat temperature") from the process simulation module ("visual display generating program") and to use the simulated parameter ("vat temperature") to perform the control activities ("controls the valve to adjust flow") within the process plant ("process control system 100").

As per claim 31, the Call et al. reference discloses the process simulation module ("visual display generating program") includes a plurality of interconnected simulation elements ("graphical elements 210, 220, 230, 240, 250"), wherein two or more of the simulation elements ("graphical elements 210, 220, 230, 240, 250")

simulate the operation of different devices (see column 9 lines 17-30, "vats, valve, pipesections") within the process plant ("process control system 100").

As per claim 33, the Call et al. reference discloses each of the simulation elements ("graphical elements 210, 220, 230, 240, 250") includes a simulation algorithm ("visual display generating program") that models the operation of an associated device ("vats, valve, pipesections") within the process plant ("process control system 100").

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,892,939 to Call et al. in view of US Pub. No. 2003/0200062 A1 to Dessureault et al.

As per claim 4, the Call et al. reference does not expressly disclose the connection element indicates a duct type connection device.

The Dessureault et al. reference discloses

(see page 5 [0072], "A base segment class 500 forms the foundation for duct 502, pipe 504, wire 506, and other classes 508. In this regard, the segment 500 may store all persistent data and display methods but duct 502 defines the name of the object, the display properties, and overrides various methods to define unique behaviors.")

(see page 5 [0077], "Different building systems objects (e.g., equipment 406 or fittings 404 ducts such as elbows, terminals, equipment, etc.) may have different numbers and types of connectors.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the history module taught by the Call et al. reference to include the real world components/objects taught by the Dessureault et al. reference.

One of ordinary skill in the art would have been motivated to modify the modify the history module to include the real world components/objects to provide object representations in multiple graphical and non-graphical displays using either fixed graphics or a fully parametric design.

8. Claims 5, 14 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,892,939 to Call et al. in view of USPN 4, 512,747 to Hitchens et al.

As per claim 5, the Call et al. reference does not expressly disclose the connection element indicates a conveyor type connection device.

The Hitchens et al. reference discloses

(see column 6 lines 41-48, "A color graphic CRT (1) displays the state of the simulated system at all times. The location of the simulated packages is periodically updated to create a visual representation of their movements. As packages move through the system their current positions are graphically displayed. If a motor driving a conveyor section containing a package is turned on the package progress is displayed as it moves through the system.")

(see column 8 lines 4-8, "An initialization command initiates the display of the simulated system on the color graphic CRT (1) with a graphic representation of the material conveying path and displaying the conveying system control device (5) input and output signals.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the history and universal operator station

modules taught by the Call et al. reference to include the simulation and displaying functionality of the conveying system taught by Hitchens et al.

One of ordinary skill in the art would have been motivated to modify the history and universal operator station modules taught by the Call et al. reference to include the simulation and displaying functionality of the conveying system to simulate the actual material conveying system operating. Thus, enabling the operator to observe system operation.

As per claim 14, the Call et al. reference discloses the graphic display module ("US 150") is communicatively coupled ("LCN 190") to the process simulation module ("visual display generating program") to receive one or more simulated parameters ("bidirectional communication of data") from the process simulation module ("visual display generating program") and wherein the graphic display module is adapted to produce an animation within the graphical depiction based on the one or more simulated parameters.

The Call et al. reference does not expressly disclose the graphic display module is adapted to produce an animation within the graphical depiction based on the one or more simulated parameters.

The Hitchens et al. reference discloses

(see Abstract, "Animation provided by the invention allows system operation to be observed. The simulated system may be started, stepped, stopped and the reaction of the control system observed on the color graphic CRT.")

(see column 1 lines 31-33, "The operation of the simulated system is shown using animation on a color graphic cathode ray tube (CRT) display.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the universal operator station module taught by the Call et al. reference to include the animation functionality of the CRT display taught by Hitchens et al.

One of ordinary skill in the art would have been motivated to modify the universal operator station module to include the animation functionality of the CRT display to allow system operation to be observed.

As per claim 45, the Call et al. reference discloses the process simulation module ("visual display generating program") is adapted to produce a simulated parameter (see column 9 lines 45-50, "first and second vat temperatures 260, 270, first and second vat liquid levels 280, 290") indicative of an operation of the process plant ("process control system 100"), to receive an output parameter from the control module pertaining to an operation of the process plant, to compare the

output parameter from the control module with the simulated parameter and to generate an alarm for display to a user based on the comparison between the output parameter from the control module and the simulated parameter.

The Call et al. reference does not expressly disclose receiving an output parameter from the control module pertaining to an operation of the process plant, comparing the output parameter from the control module with the simulated parameter and generating an alarm for display to a user based on the comparison between the output parameter from the control module and the simulated parameter.

The Hitchens et al. reference discloses

(see column 11 lines 42-54, "The apparatus as described in this specification has the ability to predict the events as they will occur in the real system. The presence of a real package is detected and processed using the simulation. The events generated by the simulated operation are compared to the events occurring in the real conveying system. As long as the real events match the simulated events within a specified tolerance the conveying system is functioning properly. If the real events do not match the simulated events a malfunction has occurred.

The apparatus sounds an alarm and communicates the specific malfunction or missed event to the operator or maintenance personnel.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the application and universal operator station modules taught by the Call et al. reference to include the alarm display functionality of the conveying system taught by Hitchens et al.

One of ordinary skill in the art would have been motivated to modify the application and universal operator station modules to include the alarm display functionality of the conveying system to communicate the specific malfunction or missed event to the operator or maintenance personnel.

9. Claims 6-10 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,892,939 to Call et al. in view of USPN 5,361,198 to Harmon et al.

As per claim 6, the Call et al. reference does not expressly disclose the connection element includes a connection status parameter indicting a status of the connection device disposed between the physical devices within the process plant.

The Harmon et al. reference discloses

(see column 11 lines 31-33, "A parameter value or component status display on the control module 114 is received via the control network 140 ...")

(see column 11 lines 39-42, "Safety related status or parameter values are obtained from the sensors associated with the safety equipment via 162, 164, the protection system 154 and ESF component control system 156.")

(see column 14 lines 54-59, "Specially dedicated continuous display requirements for accident monitoring parameters and the availability status of safety systems are displayed at 170 ...")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the universal operator station module taught by the Call et al. reference to include the status display functionality of the display units taught by Harmon et al.

One of ordinary skill in the art would have been motivated to modify the universal operator station module to include the status display functionality of the display units to provide the operators and supervisory staff with a quick means of assessing plant status from anywhere in the controlling work space.

As per claim 7, the Harmon et al. reference discloses the connection status parameter (see column 11 line 31, "parameter value or component status display") includes a state indicating that the connection device ("component") disposed between the physical devices (see column 11 lines 39-42, "safety components, process components") within the process plant (see column 9 lines 38-50, "nuclear power plant") is operationally connected (see figure 5c, "close") or not connected ("trip") between the physical devices ("safety components, process components") within the process plant ("nuclear power plant").

As per claim 8, the Harmon et al. reference discloses the connection status parameter (see column 11 line 31, "parameter value or component status display") includes a state indicating that the connection device ("component") disposed between the physical devices (see column 11 lines 39-42, "safety components, process components") within the process plant (see column 9 lines 38-50, "nuclear power plant") is running (see figure 4c, "vct level") or is not running.

As per claim 9, the Call et al. reference discloses the graphic display module ("US 150") is communicatively coupled ("LCN 190") to the process simulation module ("visual display generating program") to receive one or more simulated parameters ("bidirectional communication of data") from the process simulation module ("visual

display generating program") and wherein the connection element is adapted to receive a simulated connection status as one of the one or more simulated parameters and to display the simulated connection status as the connection status parameter.

The Call et al. reference does not expressly disclose the connection element is adapted to receive a simulated connection status as one of the one or more simulated parameters and to display the simulated connection status as the connection status parameter.

The Harmon et al. reference discloses

(see column 11 lines 31-33, "A parameter value or component status display on the control module 114 is received via the control network 140 ...")

(see column 11 lines 39-42, "Safety related status or parameter values are obtained from the sensors associated with the safety equipment via 162, 164, the protection system 154 and ESF component control system 156.")

(see column 14 lines 54-59, "Specially dedicated continuous display requirements for accident monitoring parameters and the availability status of safety systems are displayed at 170 ...")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the universal operator station module taught by the Call et al. reference to include the status display functionality of the display units taught by Harmon et al.

One of ordinary skill in the art would have been motivated to modify the universal operator station module to include the status display functionality of the display units to provide the operators and supervisory staff with a quick means of assessing plant status from anywhere in the controlling work space.

As per claim 10, the Harmon et al. reference discloses the simulated connection status ("parameter value or component status display") is adapted to indicate that the connection device ("component") disposed between the physical devices ("safety components, process components") is at a limit (see figure 4a, "normal"), is good (see figure 4a, "normal") or is bad.

As per claim 40, the Call et al. reference discloses the process simulation module ("visual display generating program") is adapted to produce a simulated parameter (see column 9 lines 45-50, "first and second vat temperatures 260, 270, first and second vat liquid levels 280, 290") indicative of an operation of the process plant ("process control system 100") and to generate an alarm (see column

8 lines 28-31, "alarming") for display to a user based on the value of the simulated parameter ("first and second vat temperatures 260, 270, first and second vat liquid levels 280, 290").

The Call et al. reference does not expressly disclose generating an alarm for display to a user based on the value of the simulated parameter.

The Harmon et al. reference discloses

(see column 3 lines 35-38, "The color graphic CRT's are coupled with touch screens for ease in accessing displays, acknowledging alarms and obtaining additional plant information.")

(see column 3 lines 57-59, "Any significant discrepancies between these independent systems are alarmed to the operator.")

(see column 4 lines 32-33, "Use of touch screens allows alarm acknowledgement and access to the current alarm list.")

(see column 7 lines 20-24, "Through this localized compact workstation, the operator is offered all the monitoring, alarming and control functions which have been previously dispersed over many control panels located throughout the control room.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the application and universal operator station modules taught by the Call et al. reference to include the alarm display functionality of the display units taught by Harmon et al.

One of ordinary skill in the art would have been motivated to modify the application and universal operator station modules to include the alarm display functionality of the display units to provide the operators and supervisory staff with a quick means of acknowledging alarms from anywhere in the controlling work space.

As per claim 41, the Call et al. reference discloses the simulated parameter ("first and second vat temperatures 260, 270") is an efficiency parameter (see column 9 lines 33-44, "low or high temperature").

As per claim 42, the Call et al. reference discloses the simulated parameter ("first and second vat liquid levels 280, 290") is a mass balance parameter ("acceptable ranges for liquid levels").

10. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,892,939 to Call et al. in view of USPN RE 30,280 to Berman et al.

As per claim 20, the Call et al. reference discloses the control module ("CM 180") is adapted to receive a simulated measurement (see column 9 lines 45-50, "first and second vat temperatures 260, 270, first and second vat liquid levels 280, 290") from the process simulation module ("visual display generating program") and an actual measurement from a device within the process plant.

The Call et al. reference does not disclose an actual measurement from a device within the process plant.

The Berman et al. reference discloses

(see column 8 lines 12-29, "... process the incoming and control signals and to automatically send back the appropriate plant condition signals for simulating ... computer model of the plant ... defined in terms of the input and output signals seen by the control system equipment 24 ... all sensor outputs are modeled and action are taken for all control or actuating signals from the control system equipment 24.")

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the computer module taught by the Call et al. reference to include both the simulated data and actual data taught by the Berman et al. reference.

One of ordinary skill in the art would have been motivated to modify the computer module to include both the simulated data and actual data for simulating to as great a degree as possible the dynamic operation of the actual plant, process or system being controlled for maximum efficiency and flexibility.

As per claim 21, the Call et al. reference discloses the control module ("CM 180") is further adapted to use the simulated measurement ("first and second vat temperatures 260, 270, first and second vat liquid levels 280, 290") from the process simulation module ("visual display generating program") to perform the control activities (see column 9 lines 33-38, "controls the valve to adjust flow") within the process plant ("process control system 100").

Allowable Subject Matter

11. Claims 12, 17-19, 22, 24-30, 32, 34-39, 43 and 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references are cited to further show the state of the art with respect to simulating process control in general:

USPN 6,041,171 to Blaisdell et al.

USPN 6,023,644 to Kinsman

USPN 5,818,736 to Leibold

USPN 5,092,449 to Bolin et al.

JPPN 6-26093 to GOTO et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Crystal J. Barnes whose telephone number is 571.272.3679. The examiner can normally be reached on Monday-Friday alternate Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571.272.3687. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Crystal J Barnes

CJB
19 October 2005